

note that the comet of 1843, which had the least perihelion distance of any on record, actually grazed the solar atmosphere about three months before the appearance of the great sun-spot of the same year. The comet's least distance from the sun was about 65,000 miles. Had it approached but little nearer, the resistance of the atmosphere would probably have brought its entire mass to the solar surface. Even at its actual distance it must have produced considerable atmospheric disturbance. But the recent discovery that a number of comets are associated with meteoric matter, travelling in nearly the same orbits, suggests the inquiry whether an enormous meteorite following in the comet's train and having a somewhat less perihelion distance, may not have been precipitated upon the sun, thus producing the great disturbance observed so shortly after the comet's perihelion passage.

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SCIENTIFIC SERIALS

OF the *Sitzungsberichte der naturwissenschaftlichen Gesellschaft Isis in Dresden* we have received the concluding part of the volume for 1869, containing the proceedings of the Society for the months of October, November, and December. Its contents are as usual of the most varied character, and we shall therefore notice only a few of the more prominent papers. In the section for prehistoric archaeology Dr. Mehwald gave an interesting notice of the researches made in Norway by a young student, M. Lerange, and further a general account of ancient mining and mining implements. Under the zoological section we find an abstract by Prof. Günther of the faunistic results of recent deep-sea dredgings, founded of course chiefly upon the reports of M. M. Pourtales and Agassiz, and our countrymen Messrs. Thomson, Jeffreys, and Carpenter. Under the head of mathematics, physics, and chemistry, is a paper by M. F. Otto on the calamine deposits in Upper Silesia, which would have better taken its place as a geologico-mineralogical paper. An important botanical paper is the revision by Dr. L. Rabenhorst of the Cryptogamia collected in the East (especially in Persia) by Prof. Haussknecht, in which the author catalogues a considerable number of Fungi and Lichens, and describes several new species and a new genus of the former class. The new genus *Seirosporium* belongs to the Discomycetous family Phacidiales, and the species *S. ocellatum*, which is figured, lives upon dry stems of *Astragalus deincanthus* Boiss. The new species described belong to the genera *Synchytrium* (2), *Ustilago* (2), *Uromyces* (1), *Puccinia* (2), *Cyathus* (1), *Montagnea* (1, figured), *Coprinus* (1), *Dothidea* (1), *Melogramma* (1), and *Rhytisma* (1).

THE fourth part of vol. xxii. of the *Zeitschrift der deutschen geologischen Gesellschaft* (1870) contains several very important memoirs. The first of these is upon new and little known Cru-tacea from Solenhofen by Prof. Kunth, illustrated with two plates, and includes detailed descriptions of the Stomatopod *Scudla pennata* (Münst), and of two new species of the same genus; and among the Isopods of *Urda rostrata* (Münst) forming the type of a new family *Urdaida*, *Reckur punctatus* (Münst), also referred to the genus *Urda*, *Naranda anomala* (Münst), and a species of *Aga*.—From M. Lemberg we find a detailed and valuable chemico-geological investigation of some calcareous deposits of the Finnish Island of Kimito, in which the author not only describes the chemical composition and mechanical condition of the rocks under consideration, but discusses at considerable length some interesting points connected with the general theories of rock-formation.—M. E. Kayser commences a series of studies of the Devonian of the district of the Rhine with a disquisition on the deposits of that age in the neighbourhood of Aix la Chapelle.—M. C. Weiss publishes an investigation of the Odontopterides, in which he discusses the forms to be referred to that group, and comes to the conclusion that the whole may be placed under the genus *Odontopteris*, which he divides into two sections, *Xenopterides* and *Callipterides*, the former including as sub-genera, *Mixoneura*, *Xenopteris*, and *Lescuropteris*; and the latter *Callipteris*, *Anopteris*, *Callipteridium*. He gives a list of the species referable to each of these sub-genera, with remarks upon their characters and distribution; several of them are described as new and figured, with others, in the three plates with which the memoir is illustrated.—These papers are followed

by some mineralogical notices by Prof. Rammelsberg treating of the meteoric stone of Chantonay, of the sulphide of iron of meteoric irons, the composition of Lievrite, and the Anorthite rock of the Basto.—In the concluding paper of this number M. G. Berendt notices the occurrence of Cretaceous and Tertiary deposits near Grodno on the Niemen.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, June 15.—“On the Fossil Mammals of Australia. Part V. Genus *Nototherium* Ow.” By Prof. R. Owen, F.R.S. The genus of large extinct Marsupial herbivores which forms the subject of the present paper, was founded on specimens transmitted (in 1842) to the author by the Surveyor-General of Australia, Sir Thomas Mitchell, C.B. They consisted of mutilated fossil mandibles and teeth. Subsequent specimens confirmed the distinction of *Nototherium* from *Diprotodon*, and more especially exemplified a singular and extreme modification of the cranium of the former genus. A detailed description is given of this part from specimens of portions of the skull in the British Museum, and from a cast and photographs of the entire cranium in the Australian Museum, Sydney, New South Wales. The descriptions of the mandible, and of the dentition in both upper and lower jaws, are taken from actual specimens in the British Museum, in the Museum of the Natural History at Worcester, and in the Museum at Adelaide, S. Australia, all of which have been confided to the author for this purpose. The results of comparisons of these fossils of *Nototherium* with the answerable parts in *Diprotodon*, *Macropus*, *Phascolarctos*, and *Phascolumys*, are detailed.

Characters of three species, *Nototherium Mitchelli*, *N. inerme*, and *N. Victoriae*, are defined chiefly from modifications of the mandible and mandibular molars. A table of the localities where fossil *Nototherium* has been found, with the dates of discovery, and the names of the finders or donors is appended. The paper is illustrated by subjects for nine quarto Plates.

“On the Organisation of the Fossil Plants of the Coal-measures. Part II. *Lepidodendra* and *Sigillaria*.” By Prof. W. C. Williamson, F.R.S. The *Lepidodendron selaginoides* described by Mr. Binney, and still more recently by Mr. Carruthers, is taken as the standard of comparison for numerous other forms. It consists of a central medullary axis composed of a combination of transversely barred vessels with similarly barred cells; the vessels are arranged without any special linear order. This tissue is closely surrounded by a second and narrower ring, also of barred vessels, but of smaller size, and arranged in vertical laminae which radiate from within outwards. These laminae are separated by short vertical piles of cells, believed to be medullary rays. In the transverse section the intersected mouths of the vessels form radiating lines, and the whole structure is regarded as an early type of an exogenous cylinder; it is from this cylinder alone that the vascular bundles going to the leaves are given off. This woody zone is surrounded by a very thick cortical layer, which is parenchymatous at its inner part, the cells being without definite order, but externally they become prosenchymatous, and are arranged in radiating lines, which latter tendency is observed to manifest itself whenever the bark cells assume the prosenchymatous type. Outside the bark is an epidermal layer, separated from the rest of the bark by a thin bast-layer of prosenchyma, the cells of which are developed into a tubular and almost vascular form; but the vessels are never barred, being essentially of the fibrous type. Externally to this bast-layer is a more superficial epiderm of parenchyma, supporting the bases of leaves, which consist of similar parenchymatous tissue. Tangential sections of these outer cortical tissues show that the so-called “decorticated” specimens of *Lepidodendra* and of other allied plants are merely examples that have lost their epidermal layer, or had it converted into coal; this layer, strengthened by the bast-tissue of its inner surface, having remained as a hollow cylinder, when all the more internal structures had been destroyed or removed.

From this type the author proceeds upwards through a series of examples in which the vessels of the medullary become separated from its central cellular portions and retreat towards its periphery, forming an outer cylinder of medullary vessels, which are arranged without order, and enclose a defined cellular axis. At the same

time the encircling ligneous zone of radiating vessels becomes yet more developed, both in the number of its vessels and in the diameter of the cylinder relatively to that of the entire stem. As these changes are produced, the medullary rays separating the laminae of the woody wedges become more definite, some of them assuming a more composite structure, and the entire organisation gradually assuming a more exogenous type. At the same time the cortical portions retain all the essential features of the Lepidodendroid plants. We are thus brought, by the evidence of internal organisation, to the conclusion that the plants which Brongniart has divided into two distinct groups, one of which he has placed amongst the vascular Cryptogams, and the other amongst the Gymnosperms Exogens, constitute one great natural family.

Stigmaria is shown to have been much misunderstood, so far as the details of its structure are concerned, especially of late years. In his memoir of *Sigillaria elegans*, published in 1839, M. Brongniart gave a description of it, which, though limited to a small portion of its structure, was, as far as it went, a remarkably correct one. The plant, now well known to be a root of *Sigillaria*, possessed a cellular pith without any trace of a distinct outer zone of medullary vessels, such as is universal amongst the *Lepidodendra*. The pith is immediately surrounded by a thick and well-developed ligneous cylinder, which contains two distinct sets of primary and secondary medullary rays. The primary ones are of large size, and are arranged in regular quincuncial order. They are composed of thick masses of mural cellular tissue. A tangential section of each ray exhibits a lenticular outline, the long axis of which corresponds with that of the stem. These rays pass directly outwards from pith to bark, and separate the larger woody wedges which constitute so distinct a feature in all transverse sections of this zone, and each of which consists of aggregated laminae of barred vessels, disposed in very regular radiating series. The smaller rays consist of vertical piles of cells, arranged in single rows, and often consisting of but one, two, or three cells in each vertical series. These latter are very numerous and intervening between all the numerous radiating laminae of vessels that constitute the larger wedges of woody tissue. The vessels going to the rootlets are not given off from the pith, as Goeppert supposed, but from the sides of the woody wedges bounding the upper part of the several large lenticular medullary rays; those of the lower portion of the ray taking no part in the constitution of the vascular bundles. The vessels of the region in question descend vertically and parallel to each other until they come in contact with the medullary ray, when they are suddenly deflected, in large numbers, in an outward direction, and nearly at right angles to their previous course, to reach the rootlets. But only a small number reach their destination, the great majority of the deflected vessels terminating in the woody zone. A very thick bark surrounds the woody zone. Immediately in contact with the latter it consists of a thin layer of delicate vertically elongated cellular tissue, in which the mural tissues of the outer extremities of the medullary rays become merged. Externally to this structure is a thick parenchyma, which quickly assumes a more or less prosenchymatous form, and becomes arranged in thin radiating laminae, as it extends outwards. The epidermal layer consists of cellular parenchyma with vertically elongated cells at its inner surface, which feebly represents the bast-layer of the other forms of Lepidodendroid plants. The rootlets consist of an outer layer of parenchyma, derived from the epidermal parenchyma. Within this is a cylindrical space, the tissue of which has always disappeared. In the centre is a bundle of vessels surrounded by a cylinder of very delicate cellular tissue, prolonged either from one of the medullary rays, or from the delicate innermost layer of the bark, because it always accompanies the vessels in their progress outwards through the middle and outer barks.

The facts of which the preceding is a summary lead to the conclusion that all the forms of plants described are but modifications of the Lepidodendroid type. The leaf-scars of the specimens so common in the coal-shales, represent tangential sections of the petioles of leaves when such sections are made close to the epidermal layer. The thin film of coal of which these leaf-scars consist, in specimens found both in sandstone and in shale, does not represent the entire bark as generally thought, and as is implied in the term "decorticated," usually applied to them, but is derived from the epidermal layer. In such specimens, all the more central axial structures, viz., the medulla, the wood, and the thick layer of true bark, have disappeared through decay, having been either destroyed, or in some instances detached and floated out; the bast-layer of the epiderm has arrested the

destruction of the entire cylinder, and formed the mould into which inorganic materials have been introduced. On the other hand, the woody cylinder is the part most frequently preserved in *Stigmaria*; doubtless because, being subterranean, it was protected against the atmospheric action which destroyed so much of the stem.

It is evident that all these Lepidodendroid and Sigillarian plants must be included in one common family, and that the separation of the latter from the former as a group of Gymnosperms, and as suggested by M. Brongniart, must be abandoned. The remarkable development of exogenous woody structures in most members of the entire family indicates the necessity of ceasing to apply either to them, or to their living representatives, the term Acrogenous. Hence the author proposes a division of the vascular Cryptogams into an Exogenous group, containing *Lyco-podiaceae*, *Equisetaceae*, and the fossil *Calomitaceae*, and an Endogenous group containing the Ferns; the former uniting the Cryptogams with the Exogens through the *Cycadaeae* and other Gymnosperms, and the latter linking them with the Endogens through the *Palmaceae*.

"Contributions to the History of the Opium Alkaloids. Part II. On the Action of Hydrobromic Acid on Codeia and its derivatives." By C. R. A. Wright, D.Sc. It has been shown in Part I. of this research* that the action of hydrobromic acid on codeia gives rise, without evolution of methyl bromide, first to bromocodeia, and secondly to two other new bases termed respectively deoxycodeia and bromotetracodeia, the latter of which, under the influence of hydrochloric acid, exchanges bromine for chlorine, yielding a corresponding chlorinated base, chlorotetracodeia; when, however, the action of hydrobromic acid is prolonged, methyl bromide is evolved in some little quantity. By digesting codeia with three or four times its weight of 48 per cent acid for five or six hours in the water-bath, vapours were evolved which, condensed by the application of a freezing-mixture to a colourless mobile liquid, the boiling-point of which was found to be 10°·5 to 11°·5, and the vapour of which burnt with a yellow-edged flame, exploded violently with oxygen, forming carbonic and hydrobromic acids. It becomes, therefore, of interest to examine in detail the action of hydrobromic acid on each of the three bodies produced from codeia under its influence.

"On the Physiological Action of the foregoing Codeia derivatives." By Michael Foster, M.D. The hydrochlorate of chlorotetracodeia and the hydrobromate of bromotetracodeia, in doses of a decigramme by subcutaneous injection or by the mouth, produced in adult cats in a very few minutes a condition of great excitement, almost amounting to delirium, accompanied by a copious flow of saliva and great dilatation of the pupils. Nictitation and defæcation occurred in some instances, and vomiting was observed on two occasions with the morphia-salt, but was very slight. The excitement was very peculiar, being apparently due partly to increased sensitiveness to noises, and partly to an impulse to rush about.

The same doses of the morphia-salt given to a young kitten produced the same flow of saliva, dilatation of pupils, and excitement (without vomiting); but the stage of excitement, which in adult cats passed gradually off in a few hours, was followed by a condition marked by a want of co-ordination of muscular movements, and presenting the most grotesque resemblance to certain stages of alcoholic intoxication. This stage was followed in turn by sleepiness and stupor, in which the kitten was left at night; in the morning it was found dead.

Two observations have shown that these salts paralyse (in dogs and cats) the inhibitory fibres of the pneumogastric; they also seem to lower the internal tension, but want of material has prevented me from ascertaining how this is brought about.

On rabbits neither salt, even in doses of a decigramme, seems to have any effect, except perhaps a slight excitement. There is no dilatation of the pupils, no flow of saliva, and, if one observation can be trusted, no paralysis of the inhibitory fibres of the pneumogastric.

No marked difference was observable between the two salts, except that the morphia salts seemed rather more potent than the corresponding codeia bodies.

The salts of deoxycodeia and deoxymorphia given by mouth or by subcutaneous injection in doses of a decigramme, produced in adult cats, almost immediately after exhibition, a series of con-

* Proc. Roy. Soc. vol. xix, p. 371

vulsions much more epileptic in character than tetanic. In one case there was a distinct rotatory movement.

In a few minutes these convulsions passed away, leaving the animal exhausted and frightened. Then followed a stage of excitement with dilated pupils and flow of saliva, very similar to the effects of the tetracodeia and tetramorphia salts, but less marked.

Doses of half a decigramme given to adult cats produced the stage of excitement only, without the convulsions.

In no case, with any specimen of product, has vomiting been witnessed.

Trials with rabbits gave only negative results. Like the tetracodeia and tetramorphia products, the deoxycodeia and deoxymorphia salts appear to paralyse the inhibitory fibres of the pneumogastric.

No marked differences could be observed between the hydrochlorates and hydrobromates of deoxycodeia or deoxymorphia.

"On the Calculation of Euler's Constant." By J. W. L. Glaisher, F.R.A.S.

Zoological Society, June 20.—R. Hudson, F.R.S., vice-president, in the chair. The Secretary read a report on the additions made to the Society's Menagerie during the month of May, 1871. Amongst these particular attention was called to a Tamandua Ant-eater (*Tamandua tetradactyla*) from Santa Martha, obtained by purchase, May 29, being the first specimen of the singular Mammal ever exhibited alive in the Society's collection.—Prof. Macdonald, of the University of St. Andrew's, Scotland, exhibited and made remarks on a series of specimens illustrative of the cranial bones of Fishes.—An extract was read from a letter received from Mr. Walter J. Scott, giving notice of a living specimen of the Australian Cassowary which had been lately captured in Queensland by Mr. Haig, and which Mr. Haig was anxious to present to the Society.—Prof. Newton exhibited and made remarks on some supposed eggs of the Sanderling (*Calidris arenaria*), procured by the North German Polar Expedition.—A communication was read from the Rev. O. P. Cambridge, containing notes on the Arachnida collected by Dr. Cuthbert Collingwood during his recent travels in the Chinese seas.—A communication was read from Dr. John Anderson, Curator of the Indian Museum, Calcutta, containing notes on some rare species of Rodents collected by Mr. Forsyth during his recent expedition to Yarkand.—Messrs. Sclater and Salvin read a revised List of the species of Laridæ which have been found to occur within the limits of the Neotropical region. These were stated to be 32 in number, whereof one belonged to the sub-family Rhynchopinæ, 14 to the Sterninæ, 16 to the Larinæ, and one to the Lestrudinæ.—A communication was read from Dr. J. E. Gray, F.R.S., containing notes on the Bush-bucks (*Cephalophi*) contained in the collection of the British Museum, together with the descriptions of two new species of the genus from the Gaboon.—A second communication from Dr. J. E. Gray contained some notes on the skull of a roebuck in the British Museum, originally received from the Museum of the Zoological Society of London.—Mr. Sylvanus Hanley communicated the description of a new species of *Monocorydella* from Sarawak, Borneo, which he proposed to call *M. Walpolei*.—Mr. D. G. Elliot read a review of the genus *Ptiloris*, Sw.—Mr. D. G. Elliot also read a description of a supposed new species of Guinea-fowl from Ugogo, Central Africa, founded on a drawing made by Colonel Grant during the expedition of Messrs. Speke and Grant, which he proposed to name *Numida Granti*.—Mr. R. B. Sharpe read a paper on the Birds of Cameroons, Western Africa, based upon collections recently formed by Mr. A. Crossley in that locality. The Avi-Fauna of the country was shown to be almost identical with that of Gaboon. A species of Thrush was believed to be new to science, and was proposed to be called *Turdus Crossleyi*.—Mr. John Brazier communicated some notes on the localities of *Dolium melanostoma*, *Corus rhododendron*, and other species of land-shells found in Australia and in the adjacent islands of the Australian seas.—Mr. W. Saville Kent read a paper on two new Sponges from North Australia, the principal peculiarity of which consisted of their being arranged round a central stem or axis. These he referred to a new genus proposed to be called *Caulispongia*.—Prof. Flower communicated a paper by Mr. J. B. Perrin on the myology of the limbs of the Kinkajou (*Cerculeptes caudivolutus*), to which were added some remarks on the myology of the limbs of the *Paradoxurus typus* and *Felis caracal*, and more particularly with reference to the chief points of difference between these animals.

BRISTOL

Observing Astronomical Society.—Observations to May 31, 1871. *The Sun*.—Mr. T. W. Backhouse writes that on March 19 at 21h. 30m. a spot on the sun's S. hemisphere had an umbra 19,000 miles long, but its greatest width was but 3,500 miles. This spot passed the centre of the sun on the 21st. On the 22nd at 3h. there was a curious curve of numerous small spots starting from it. An extensive group which passed N. of the sun's centre on the 23rd contained on the 27th at 5h. the largest spot then on the sun. Its penumbra was 29,000 miles in diameter, and its umbra 14,000 miles long; yet if it existed at all on the 24th at 21h. it must have been quite small. A spot in the sun's S. hemisphere which passed the middle of the sun on April 11, and which was not large on the 6th, on the 7th at 21h. 35m. had a penumbra 63,000 miles long. On the 9th at 21h. 15m. it was about 41,000 miles long, and its chief umbra 13,000 miles in diameter, and mostly of a light shade. On April 20 at 21h. 45h. a spot also in the southern zone had an umbra 25,500 miles long; but its f part was very narrow, its β part was very irregular. Its f part became broader, and on the 24th at 20h. was separated from the β part. The umbra had previously shortened, being only about 21,000 miles long on the 23rd; at 21h. on the 23rd it passed the same centre. On the 28th at 3h. 20m. the penumbra was 38,000 miles long. At that time there was another large solar spot also in the S. zone, which had a penumbra 33,000 miles in diameter then; but on May 4 at 5h. 15m. it was 43,000 miles long and 35,000 miles wide, and it is now (May 8) larger still. Its umbra was roundish and much mottled, and on May 4 at 4h. was 17,000 miles long and 14,500 wide. On the 5th at 21h., however, there was a very slender bridge of light across it towards the southern part, and another farther north two-thirds across it. The latter still remains (May 8, 3h. 30m.), and nearly cuts the umbra in two; but the former has disappeared. Mr. Albert P. Holden, of London, reports as follows:—"April 10, 1871. A large spot, surrounded by an extensive penumbra, has recently appeared, which I observed at 2h. this day. The chief spot was rather long and narrow, except at one end, which was considerably wide, and the narrow portion was crossed by three complete (and one partial) bridges. The penumbra was unusually pale, and the umbra of a decided light-brown hue. In the upper part of the broad portion of the umbra was a large nucleus intensely black, and so large and dark as to be visible with a very low power. Almost joining the 'yawning gulf' of the nucleus was a light triangular patch, not quite so light as the penumbra. From the great ease with which the nuclei have been seen on this and other occasions it would seem as if they increased in visibility with the approach of the maxima of the sun-spot period. When they are visible, as on the present occasion, the windward penumbra of the spot in which they occur are always unusually light in colour."—Mr. William F. Denning, of Bristol, observed the sun with his 10 $\frac{1}{2}$ in., and 4in. reflector on May 26, but with the exception of a large scattered group the spots were neither large nor interesting.

Jupiter.—Mr. Albert P. Holden says: "On February 20 at 7h. 30m. I observed this planet, and found the usual equatorial belts to present a most remarkable appearance. The whole equator was covered by what appeared to be great masses of clouds stretching across the planet in four parallel, but rather irregular, rows, each row containing about four or five distinct masses of cloud. As I was using a diagonal eyepiece I thought at first the mirror had become covered with moisture, but found the phenomenon to be really on the planet's surface. With a low power the whole equator had a mottled appearance, but higher powers brought out the masses of cloud very distinctly. The clouds coming over prevented my observing whether the rotation of the planet would change the scenery of the disc at all." Edmund Neison, of London, writes with regard to Jupiter: "The only result worth mentioning is the gradual deepening of the tinge of the equatorial belts and the increase in the general orange tinge of the whole disc. In fact, on May 15 it appeared to have changed to a distinct red. This is probably due merely to the low altitude of the planet, and its immersion in the orange mists of sub-sunset."

Mars.—Mr. Albert P. Holden, with his 3in. refractor, has obtained some very good views of this planet. He writes: "The Kaiser Sea and Dawes Ocean come out very distinctly. This planet seems to bear magnifying much more readily than other objects, eighty to the inch of aperture giving most excellent views."

PARIS

Academie des Sciences, June 19.—M. Claude Bernard in the chair. M. Claude Bernard read a letter from Mr. Alexander Herschel, noticing the death of his father on behalf of himself and of his eldest brother now in India. The lamented Sir John Herschel was the senior foreign associate member of the Institute. The foreign associate members are only five in number; it is considered the highest honour the Academy can offer to a foreigner. The President noticed also the death of the celebrated General Probert, who was an academician of long standing, and had devoted his whole life to the study of projectiles. His memoirs are numerous in the *Comptes Rendus*, but more numerous at the War Office. He was of opinion that the Prussian steel gun should be adopted by the French artillery, but his Imperial Majesty being a great artilleryist, his opinion was totally disregarded. The vacancies to be filled amongst members and associates are now six. They have never been so numerous. There were twelve correspondents to elect before the investment of Paris took place. M. Dumas presented a memoir on the reciprocal action of magnetism and electricity circulating in a vacuum. The memoir was written by M. De La Rive, a foreign associate member of the Academy, and describes experiments tried with an apparatus analogous to the magnificent instruments exhibited by M. De La Rive at the "Champ de Mars" universal exhibition.—M. Elie de Beaumont, the other perpetual secretary, has directed public attention to the extraordinary cold experienced on the 18th May and 3rd June 1871, and asked for observations relating to it. Every information must be directed to him, and will be mentioned in the *Comptes Rendus*. Several other communications are duly acknowledged, and will be printed. Some of them relate to other severe depressions of temperature witnessed late in the season in former years; hoar frost was observed as late as in July 1802, which appears to have been one of the worst years ever known for low temperature in the summer.—M. Grémand de Lany, the senior member of the Scientific Staff of the Parisian papers, has published an interesting book on the Academy of Sciences during the siege of Paris, giving a fair idea of the amount of work executed by members resident in Paris during that eventful period of its annals. The Academy has to appoint a committee for reporting upon the memoirs sent to compete for the great prize of mathematics proposed by the government. The subject proposed belongs to the theory of elliptical functions. No qualification of nationality is required. The names of the competitors are kept sealed and opened only if successful. MM. Bertrand, Hermite, Serret, Leonville, and Bonner were appointed.—A most interesting discussion took place on a paper relating to the treatment of typhus during the Mexican campaign, showing that typhus is unquestionably contagious, as well as many other diseases of the same kind. The cold and moisture is not so much to be feared as stagnant hospital air, and treatment under canvas even in cold weather is perhaps the best that can be imagined.—M. Campion, the first assistant to M. Payen, presented a memoir on the manner of blasting rocks with dynamite. That paper is a kind of *résumé* of M. Campion's experiments during the first investment of Paris. He was closely engaged in dangerous operations, practised for protecting the town. According to every probability, he will be appointed a member to fill the chair of his professor.—Five or six other papers were read, too long to report.

VIENNA

I. R. Geological Institution, May 2.—Dr. Gümbel, of Munich, gave an account of his investigations of the different forms of Dactylopora, found chiefly in the Triassic limestones of the Alps. Notwithstanding some differences in the structure, he recognised in them a strong resemblance to living and tertiary Dactylopora. Great and constant varieties in the forms led him to distinguish a large number of different species.—Mr. F. Pick, who had visited the Isle of Milo in the month of March, made a report of the numerous earthquakes which had been observed there since the beginning of the year. From the middle of January up to the month of March they continued incessantly, and during the time between the last days of February till the 3rd March more than twenty shocks were felt daily, not seldom two or three in one hour. The St. George volcano on Santorin was seen on March 20 in continuous, but feeble activity.—M. v. Lill discovered the rare Ullmannite (Nickel-Antimon-Pyrites) at a new locality in Carinthia, the Rinkenbergr, near Bleiburg, where it is imbedded in slaty schists and crystalline dolomite.—Another mineralogical discovery of interest communicated by

T. Niedzwiedzki is the occurrence of Trinkerite at Gams, near Hieflau, in Styria. This fossil resin, which contains more than 4 per cent. of sulphur, was first described a few months ago by Dr. Tschermak, of Carpano, in Istria, where it was found in a coal of Eocene age. At Gams it is imbedded in a dark coloured rock, which belongs to the Gasau (Upper Cretaceous) formation.—Prof. E. Suess on the Tertiary land fauna of middle Italy. The study of the rich collections of fossil mammalia in the museums in Pisa and Florence enabled the author to parallelise the different faunæ of the Upper Tertiary beds of middle Italy, which had been distinguished quite correctly by Falconer, Lartet, &c., with those of Austria. The first mammalian fauna of the Vienna Basin, the fauna of Eibiswald, with Amphicyon intermediaries, Hyotherium Sömmeringi, Palæomerix, Crocodilus, Trionyx, &c., is represented in Italy by the fauna of the lignites of Monte Bamboli. The second fauna of the Vienna Basin, the fauna of Eppelsheim with *Mastodon longirostris*, *Hippotherium gracile*, &c., is not yet known in Italy. The fauna of the Arno Valley, on the contrary, which is represented in a marvellous richness in the museum of Florence, seems to be wanting in the Vienna Basin. This third fauna is characterised by *Elephas meridionalis*, *Machairodus*, *Bos etruscus*, *Hippopotamus major*, &c.; traces of it M. Suess thinks he has recognised in some fossils from the caverns of the Karst (Istria). The fourth fauna, with *Elephas primigenius* which is to be found everywhere in our loess, has been discovered also in some localities of Tuscany in the so-called Pauchina, a clay similar to the loess.—M. Schwackhöfer exhibited a series of rocks rich in phosphoric acid, which occur in the Silurian, as well as in the Cretaceous beds of Eastern Galicia, the discovery of which he hopes will be of great use for agricultural purposes.

BOOKS RECEIVED

ENGLISH.—The Homing or Carrier Pigeon: W. B. Tegetmeier (Routledge).

AMERICAN.—The Monthly Reports of the Department of Agriculture for 1868-69; The Annual Report of the Commission of Agriculture, 1868; The Annual Report of the U.S. Department of Agriculture, 1862; Government Printing Office, Washington.—The Elements of Physics: Prof. Hinrichs.

FOREIGN.—Die Pflanzenstoffe, &c.: Drs. A. and Th. Husemann (Schluss).—(Through Williams and Norgate).—Discussion der während der totale Sonnenfinsterniss am August 1868 angestellten Beobachtungen und der daraus folgenden Ergebnisse: Prof. E. Weiss.—Elektrodynamische Massbestimmungen: W. Weber.—Physische Zusammenkünfte der Planeten: C. von Littrow.

DIARY

MONDAY, JULY 3.

ENTOMOLOGICAL SOCIETY, at 7.

ROYAL INSTITUTION, at 2.—General Monthly Meeting.

FRIDAY, JULY 7.

GEOLOGISTS' ASSOCIATION, at 8.—On the Upper Limits of the Devonian System: J. R. Pattison.

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